study of the larvae of these forms, discovered the interesting fact that the males have the eyes modified to secure a kind of double vision.

The lower portion of each compound eye is segmented off into a distinct lobe, having a somewhat different radius of curvature. (Plate II, Fig. 1).

This lower lobe is heavily pigmented, and since its ommatidia are directed downward, is adjusted for seeing in the lesser light; while the upper, larger lobes are less pigmented, or non-pigmented, and face upward toward the primary source of light.

A subsequent examination of many different aquatic larvae showed that the eyes of most of them present a distinct pigmental division into an upper and lower portion.

This modification is probably of larval adjustment, an adaptation to the condition of a stronger surface light and a more subdued reflection from the bottom of the pool or stream.

E. W. Roberts.

EXHAUSTION AND SENILITY IN NERVE CELLS

Dolley (Jour. Med. Research, April, 1911) gives an interesting account of recovery from exhaustion known to occur in nerve cells as the result of activity. In exhaustion the following conditions of cells may be distinguished.

1. Cells (which in young, healthy animals are the great majority) that come fully back after activity to a resting condition. The general cell-contents is restored first, the nucleus (exhausted first) is last to be restored.

2. Cells that suffer, thru activity, some qualitative damage and disorganization of structure,—either (a) temporary, i. e. capable of a large degree of restoration, or (b) in which the disintegration is so profound that it represents a permanent loss.

In the cases of temporary disorganization an irregularity in the form of the cells is shown, due to loss of substance. With repetition of activity (and with increased age) this irregularity becomes permanent and exaggerated, accompanied by deficiency in chromatin, by loss of nucleus, etc. A perfect natural series from

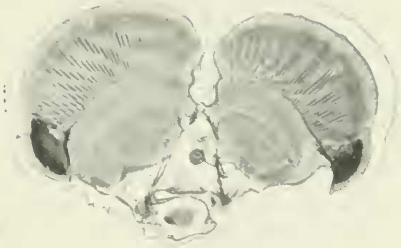

Fig. 1. Section of Compound Eyes of Larva of May-fly (See p. 320).

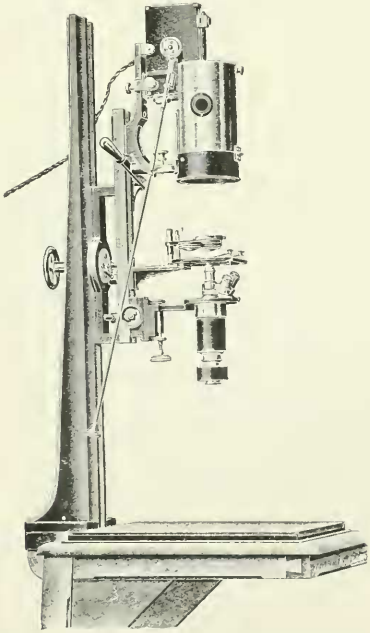

Fig. 2. *Edinger's Drawing and Projection Apparatus* [Ernest Leitz]

This cut illustrates the piece of apparatus described on page 239 of the July number of this Journal.